

Injury Prediction

A Basketball Report

Richard Hinds

Outline



Background



Data Understanding



Modeling



Results



Conclusions &
Recommendations



Future Considerations

Background

Kevin Durant

2x NBA Champion

2x NBA Finals MVP

NBA MVP

9x NBA All-Star

NBA Rookie of the Year

4x NBA scoring champion



Background

POP!



Background

Season ending injuries

Physically devastating

Emotionally taxing

Financially challenging



Data Understanding

NBA Injury Dataset from Kaggle

>9 seasons from 2010-2019

17,000 entries

NBA Player Statistics

Biographic

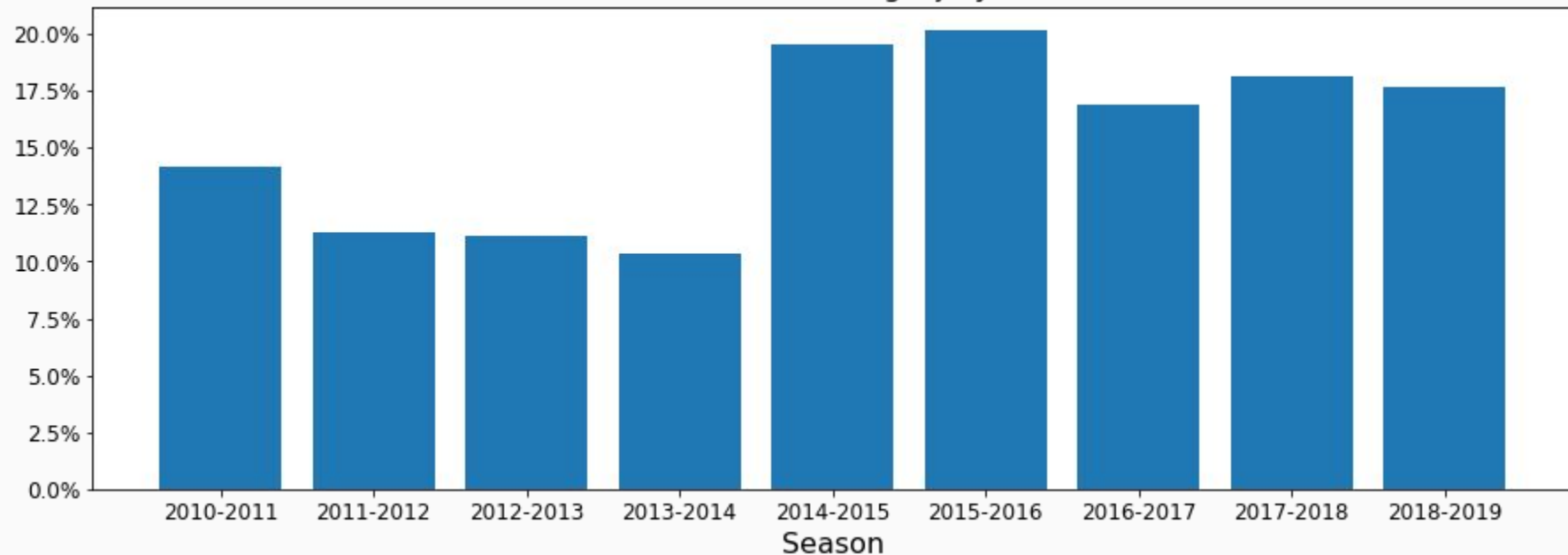
Performance

kaggle

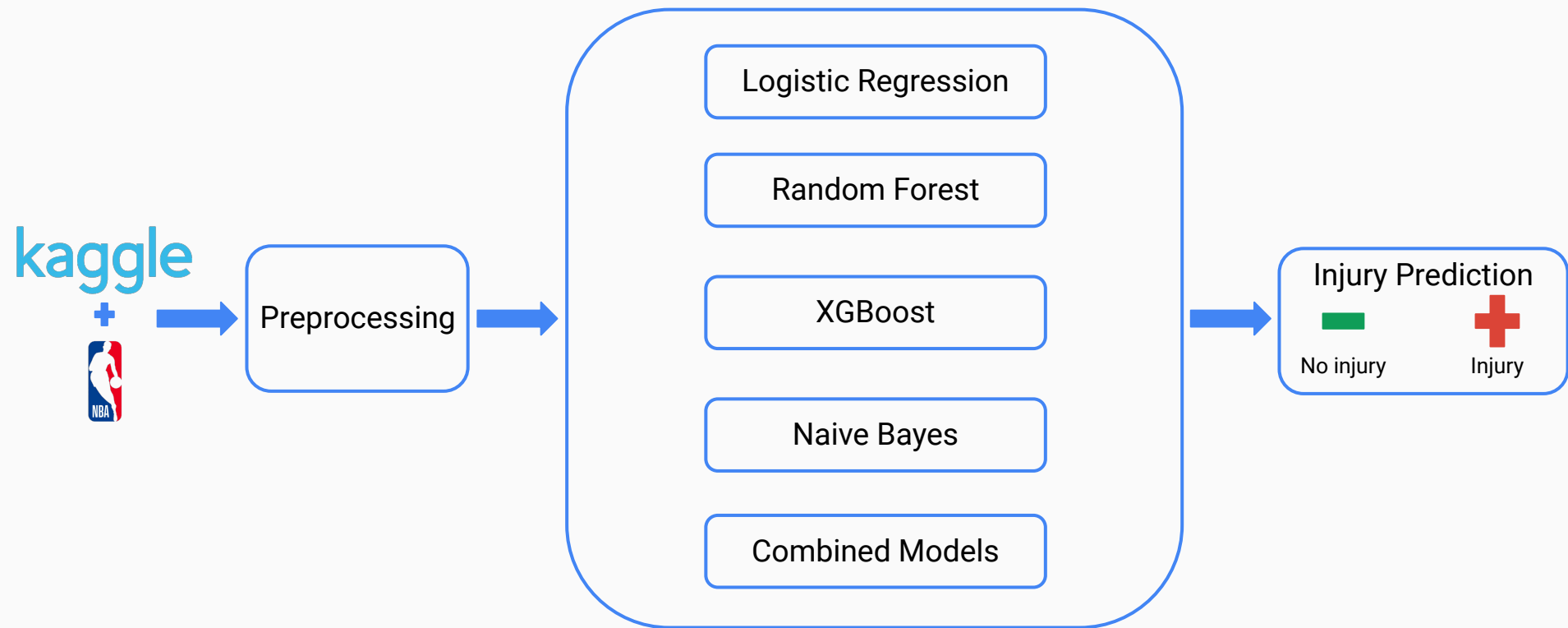


Data Understanding

Incidence of season ending injury in the NBA



Modeling



Results

Model	Accuracy	AUC	f1 score
XGBoost	0.87	0.50	0.00
Random Forest	0.84	0.64	0.15
Combined Models	0.75	0.66	0.29
Naive Bayes	0.66	0.62	0.25
Logistic Regression	0.61	0.66	0.29

Results

1.4x risk of injury per personal foul

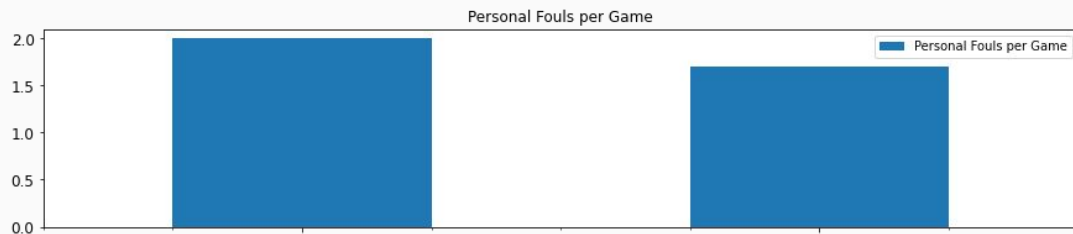
1.37x risk of injury per inch of height

1.29x risk of injury per minute played

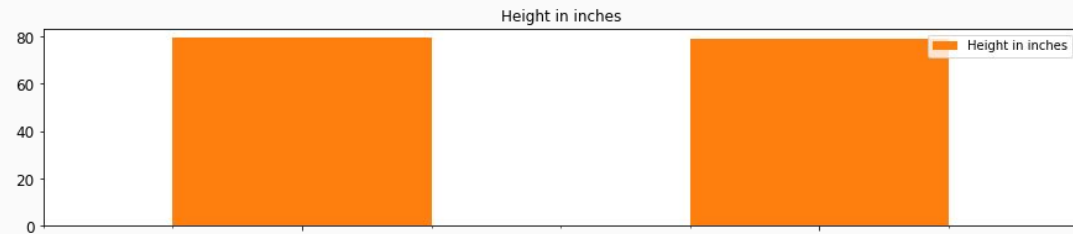


Conclusions & Recommendations

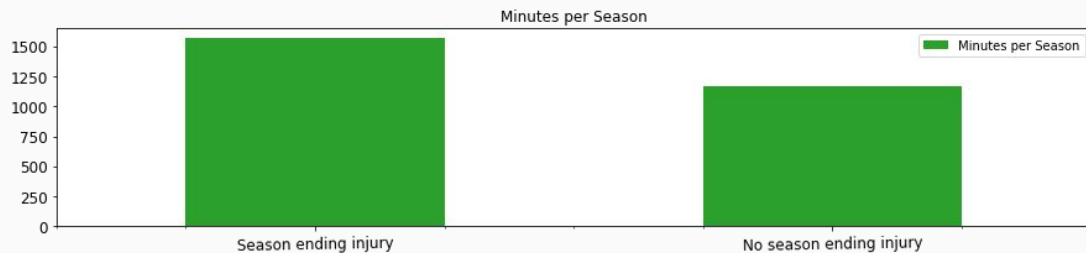
2.0 vs 1.7 fouls per game



79.4 vs 79.1 inches tall



1570 vs 1164 minutes per season



Conclusions & Recommendations

Foul avoidance

Monitor tall (>6'8") players

Strategic resting



Conclusions & Recommendations

2017-2018 Pre-Injury

2.0 fouls per game

6'10" inches tall

2325 minutes per season



Current season

2.1 fouls per game

6'10" inches tall

2047 minutes per season

Future Considerations

Matched cohort study

Injury segmentation

Weekend warrior extrapolation



Thank You

Richard Hinds
Data Science Professional

Email

RichardHindsMD@gmail.com

Github

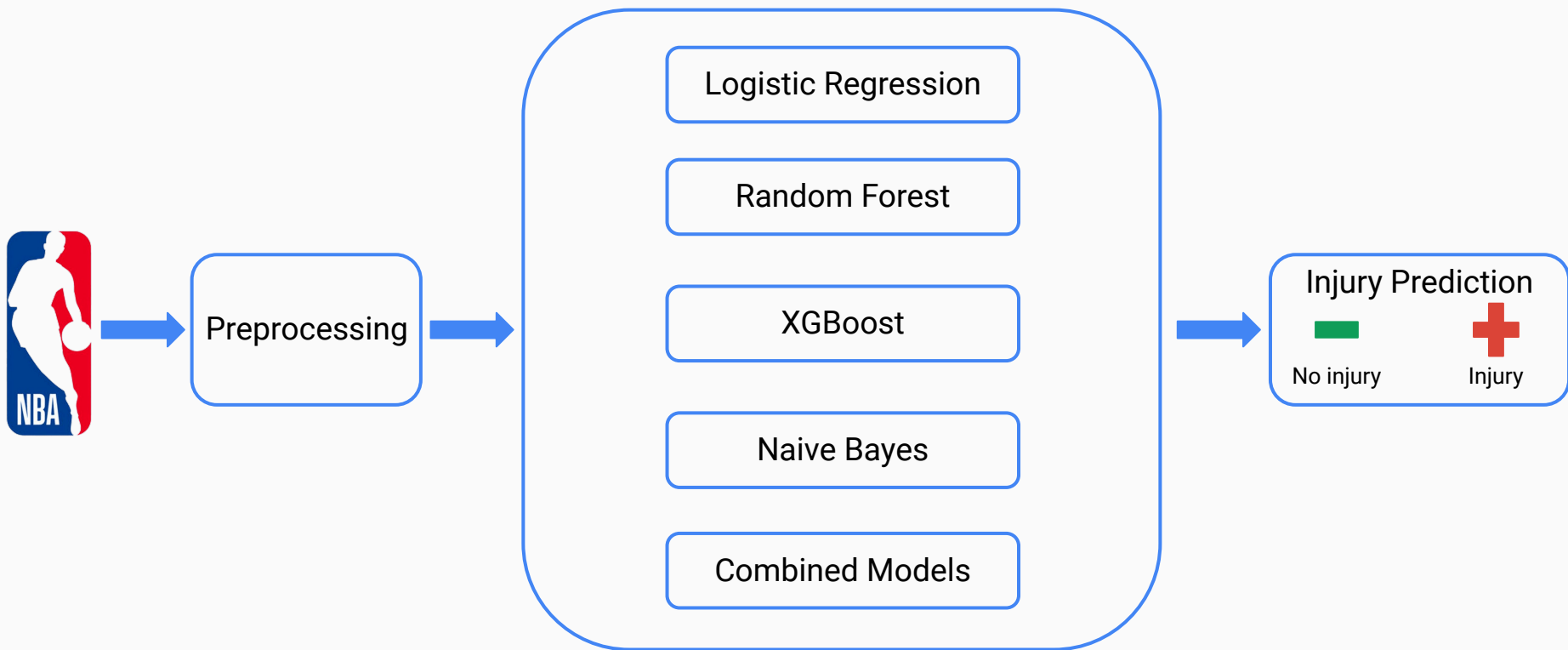
github.com/RH3421

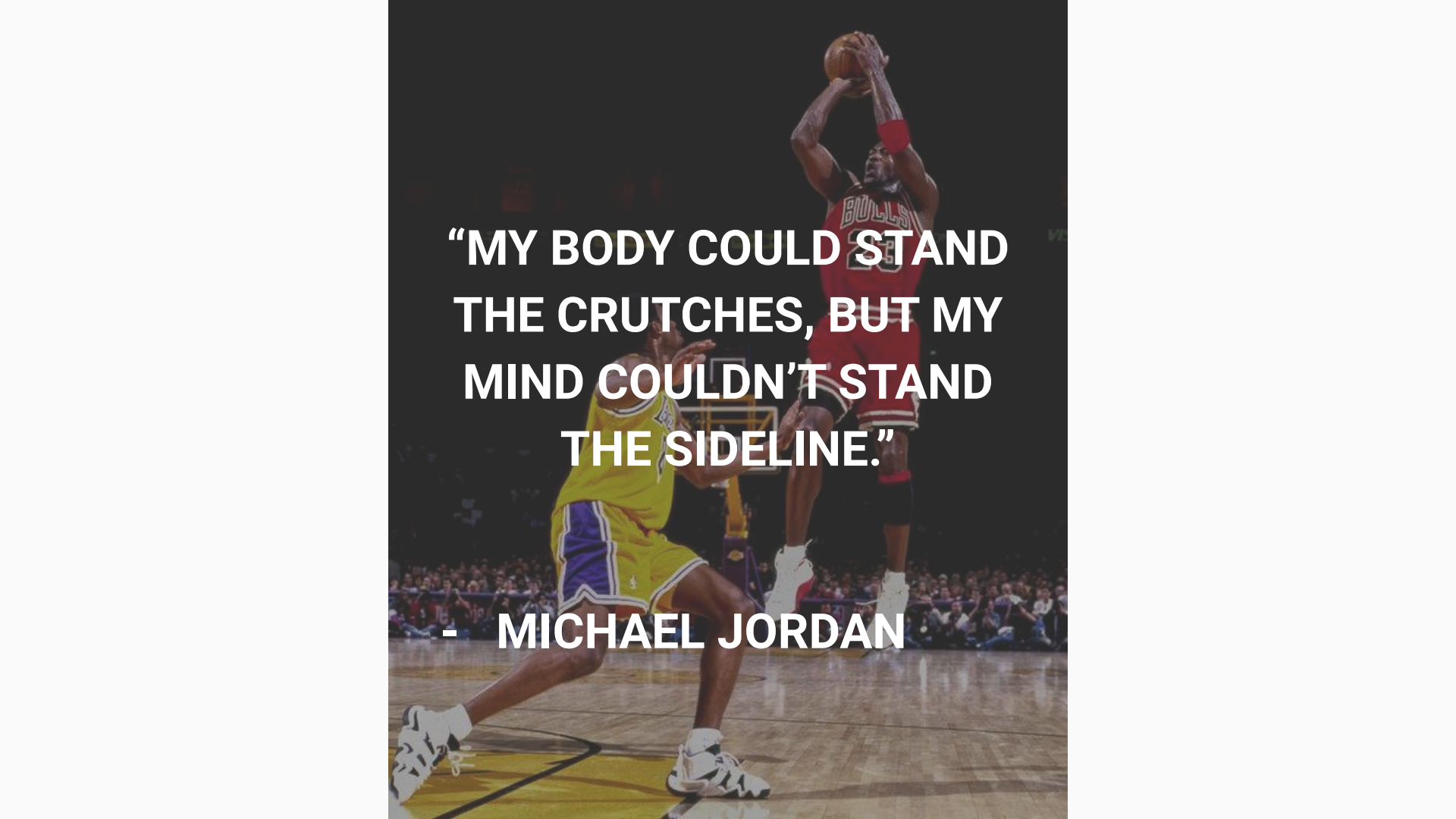
LinkedIn

[LinkedIn.com/in/richardhindsmd](https://www.linkedin.com/in/richardhindsmd)

APPENDIX

Modeling



A full-page background image showing Michael Jordan in a red Chicago Bulls jersey (number 23) jumping high to shoot a basketball. A defender in a yellow Los Angeles Lakers jersey is jumping to block him. The scene is set in a basketball arena with a crowd visible in the background.

**“MY BODY COULD STAND
THE CRUTCHES, BUT MY
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THE SIDELINE.”**

- MICHAEL JORDAN

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